

WHAT IS CLAIMED IS :

1. A valve operating system for turning an actuator of a valve about an axis relative to a body of the valve to operate the valve between first and second positions, in one of which the valve is open and in the other of which
5 the valve is closed, the system comprising:

a motor having a rotatable shaft;

a bracket for associating the valve operating system with the valve;

and

10 an operative coupling for causing rotation of the motor shaft to turn the valve actuator to operate the valve;

wherein the bracket is constructed and arranged for fitting onto the valve and comprises a) a ring for coaxially encircling the valve body axially beyond a radially outwardly open groove in the exterior of the valve body,
15 b) locking parts that are disposed axial of the ring and positionable on the bracket for selective engagement with, and disengagement from, the groove to axially lock the bracket to the valve body when engaged with the groove and to axially unlock the bracket from the valve body when disengaged from the groove, and c) additional parts for locking each locking part to the ring
20 when the respective locking part is engaged with the groove and presenting a dimensional interference to the valve body to restrict turning of the bracket on the valve body as the motor operates the valve.

2. A valve operating system as set forth in claim 1 in which at least
25 one of the additional parts both locks the respective locking part to the ring when the respective locking part is engaged with the groove and presents a

dimensional interference to the valve body to restrict turning of the bracket on the valve body as the motor operates the valve.

3. A valve operating system as set forth in claim 2 in which the at
5 least one additional part comprises a locking pin that passes through both a through-hole in the respective locking part and a clearance notch in an inner margin of the ring.

4. A valve operating system as set forth in claim 3 in which the
10 locking part through which the locking pin passes comprises a flat locking plate that has a generally semi-circular shape and that is pivoted on the bracket for swinging about a pivot axis between a locking position where an inner margin of the locking plate fits in the groove in the valve body and an unlocking position where the inner margin of the locking plate is free of the
15 groove.

5. A valve operating system as set forth in claim 4 in which the locking plate comprises a series of through-holes through any one of which the locking pin can pass, and the ring comprises a flat generally circular
20 plate having a series of clearance notches in its inner margin.

6. A valve operating system as set forth in claim 1 in which each locking part comprises a flat locking plate that has a generally semi-circular shape and that is pivoted on the bracket for swinging about a respective
25 pivot axis between a locking position where an inner margin of the respective locking plate fits in the groove in the valve body and an unlocking position where the inner margin of the respective locking plate is

free of the groove, and in their locking positions, the locking plates encircle the valve body.

7. A valve operating system as set forth in claim 6 in which each
5 locking plate comprises a series of through-holes, the ring comprises a
generally circular flat plate having a series of clearance notches in its inner
margin, each of which notches registers with a respective through-hole in
the locking plates when the locking plates are in locking position, and the
additional parts include locking pins, each of which passes through both a
10 through-hole in the respective locking plate and corresponding clearance
notch in the ring, at least one of the locking pins protruding axially beyond
the corresponding clearance notch to present a dimensional interference to
the valve body for restricting turning of the bracket on the valve body as the
motor operates the valve.

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8. A valve operating system as set forth in claim 7 in which the
bracket further comprises respective posts on which respective locking
plates are pivoted, and respective fasteners that fasten the respective posts to
the ring.

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9. A valve operating system as set forth in claim 8 further including a
gear drive that comprises a gear set housed within a gear drive housing for
placing the valve actuator in driven relation to the motor, and additional
fasteners for fastening the posts to the gear drive housing.

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10. A valve operating system as set forth in claim 9 in which the gear
drive comprises an input shaft journaled on the gear drive housing coaxial

with the motor shaft and an output shaft journaled on the gear drive housing coaxial with the valve actuator, and the gear set comprises a bevel gear set for coupling the input and output shafts at 90° to each other and amplifying the motor torque for turning the valve actuator.

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11. A valve operating system as set forth in claim 1 further including a gear drive that comprises a gear set housed within a gear drive housing for placing the valve actuator in driven relation to the motor.

10 12. A valve operating system as set forth in claim 11 in which the gear drive comprises an input shaft journaled on the gear drive housing coaxial with the motor shaft and an output shaft journaled on the gear drive housing coaxial with the valve actuator, a coupler on the exterior of the gear drive housing for coupling an end of the output shaft with the valve actuator,
15 and the gear set comprises a bevel gear set coupling the input and output shafts at 90° to each other and amplifying the motor torque for turning the coupler.

13. A valve operating system as set forth in claim 12 in which the
20 gear drive further includes an override on the exterior of the gear drive housing for turning the output shaft of the gear drive from a source other than the input shaft.

14. A valve operating system as set forth in claim 1 in which the
25 motor comprises an air motor.

15. A valve operating system for turning an actuator of a valve about an axis relative to a body of the valve to operate the valve between first and second positions, in one of which the valve is open and in the other of which the valve is closed, the system comprising:

- 5 a motor having a rotatable shaft;
- a mount for associating the valve operating system with the valve; and
- an operative coupling for causing rotation of the motor shaft to turn the valve actuator to operate the valve;

wherein the operative coupling comprises a gear drive that comprises
10 a gear set housed within an interior of a gear drive housing for placing the valve actuator in driven relation to the motor, the gear drive comprises an input shaft journaled on a gear drive housing coaxial with and having a protruding end coupled to the motor shaft, an output shaft journaled on the gear drive housing coaxial with the valve actuator, a coupler coupling a
15 protruding end of the output shaft with the valve actuator, and a bevel gear set within the interior of the housing coupling the input and output shafts at 90° to each other and amplifying the motor torque for turning coupler.

16. A valve operating system as set forth in claim 15 in which the
20 motor comprises an air motor.

17. A valve operating system as set forth in claim 15 in which the output shaft comprises an opposite end that protrudes from the gear drive housing at a location opposite the coupler and can be engaged by a tool for
25 turning the output shaft and coupler independently of the motor.

18. A valve operating system as set forth in claim 15 in which the gear drive housing comprises a cylindrical wall surrounding the protruding end of the input shaft, and the motor comprises a cylindrical housing that surrounds an end of the motor shaft and is telescopically fit to the cylindrical wall.
5 wall.

19. A valve operating system as set forth in claim 18 in which the cylindrical housing of the motor telescopically fits over the outside of the cylindrical wall of the gear drive housing, and further including fasteners for
10 fastening the motor housing to the cylindrical wall of the gear drive housing.

20. A bracket for associating a valve operating system having a motor for turning an actuator of a valve about an axis relative to a body of the valve to operate the valve between first and second positions, in one of
15 which the valve is open and in the other of which the valve is closed, the bracket comprising:

a) a ring for coaxially encircling the valve body axially beyond a radially outwardly open groove in the exterior of the valve body, b) locking parts that are disposed axial of the ring and positionable on the bracket for
20 selective engagement with, and disengagement from, the groove to axially lock the bracket to the valve body when engaged with the groove and to axially unlock the bracket from the valve body when disengaged from the groove, and c) additional parts for locking each locking part to the ring when the respective locking part is engaged with the groove and presenting a
25 dimensional interference to the valve body to restrict turning of the bracket on the valve body as the motor turns the valve actuator.

21. A bracket as set forth in claim 20 in which at least one of the additional parts both locks the respective locking part to the ring when the respective locking part is engaged with the groove and presents a dimensional interference to the valve body to restrict turning of the bracket
5 on the valve body as the motor operates the valve and comprises a locking pin that passes through both a through-hole in the respective locking part and a clearance notch in an inner margin of the ring to protrude axially beyond the ring for presenting a dimensional interference to the valve body for restricting turning of the bracket on the valve body as the motor turns the
10 valve actuator.

22. A bracket as set forth in claim 21 in which the locking part through which the locking pin passes comprises a flat locking plate that has a generally semi-circular shape and that is pivoted on the bracket for
15 swinging about a pivot axis between a locking position where an inner margin of the locking plate fits in the groove in the valve body and an unlocking position where the inner margin of the locking plate is free of the groove, the locking plate comprises a series of through-holes through any one of which the locking pin can pass, and the ring comprises a flat
20 generally circular plate having a series of clearance notches in its inner margin.